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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/773,519	02/06/2004	Cong Lu	021653-002200US	6543

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EXAMINER

LUU, CHUONG A

ART UNIT	PAPER NUMBER
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2818

DATE MAILED: 04/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/773,519

Applicant(s)

LU, CONG

Examiner

Chuong A. Luu

Art Unit

2818

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claims 1-18 have been considered but are moot in view of the new ground(s) of rejection.

DETAILED ACTION

PRIOR ART REJECTIONS

Statutory Basis

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The Rejections

Claims 1, 3-4, 6-13, 15-16 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Isao et al. (U.S. 5,674,647).

Isao discloses a phase shift mask with

(1); (11) providing a quartz substrate (1) having a surface, the quartz substrate comprising a thickness;

forming a MoSi film overlying the surface of the quartz substrate (see paragraph [0012]);

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patterning the MoSi film overlying the quartz substrate to form a mask pattern (see Figures 4-6); forming an opaque edge structure; whereupon the opaque edge structure has a light transmittance ranging from about 0% to about 3% (see column 4, lines 3-60; column 14, lines 5-67);

(3); (15) wherein the forming of the opaque edge structure is provided by focused ion beam (see column 8, lines 43-51);

(4); (16) wherein the opaque edge structure occupies a region on the quartz substrate that is free from the mask pattern (see Figure 6);

(6); (18) further comprising cleaning the patterned MoSi film and opaque edge structure (see Figure 6);

(7); (13) wherein the carbon is in a C12, C13, C14 state (see column 13 lines 25-65);

(8) wherein the patterning of the MoSi film is a photolithography process (see column 1, lines 25-35);

(9) wherein the patterning is the only photolithography process used by the method (see column 1, lines 25-35);

(10) wherein the mask pattern is free from a chrome film (see Figure 6);

(12) wherein the mask structure is a mask (see Figure 6).

DETAILED ACTION

PRIOR ART REJECTIONS

Statutory Basis

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The Rejections

Claims 1-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Isao et al. (U.S. 5,674,647) in view of Shiota et al. (U.S. 20040086788).

Isao teaches everything above except for wherein the mask pattern is for a half tone phase shift mask. However, Shiota disclose a phase-shift mask with (5); (17) wherein the mask pattern is for a half tone phase shift mask (see paragraphs [0016]-[0023]). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Isao and Shiota to form a the mask pattern is for a half tone phase shift mask. Doing so would facilitate the manufacture of the semiconductor device and improve the protection characteristics of the cap layer on the semiconductor structure.

Claims 1-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Isao et al. (U.S. 5,674,647) in view of Isao et al. (U.S. 5,474,864).

Isao's 647 discloses the above outlined features except for wherein the forming of the opaque edge structure is provided by laser deposition. However, Isao's 864

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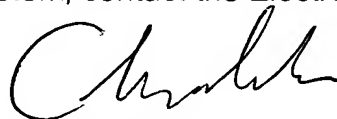
discloses a phase shift mask with (2); (14) wherein the forming of the opaque edge structure is provided by laser deposition (see column 17, lines 1-28. Figure 26). It would have been obvious to one having ordinary skill in the specific art to form the opaque edge structure is provided by laser deposition, since Isao's 647 does not limit the deposition of the opaque edge structure is provided by laser deposition and since Isao's 864 teaches that the deposition of the opaque edge structure is provided by laser deposition is well known in the art and interchangeable with other deposition process.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chuong A. Luu whose telephone number is (571) 272-1902. The examiner can normally be reached on M-F (6:15-2:45).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Nelms can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Chuong Anh Luu
April 12, 2006